

ABSTRACT

A lens and encapsulant made of an amorphous fluoropolymer for a light-emitting diode (LED) or diode laser, such as an ultraviolet (UV) LED (UVLED). A semiconductor diode die (114) is formed by growing a diode (110) on a substrate layer (115) such as sapphire. The diode die (114) is flipped so that it emits light (160, 365) through the face (150) of the layer (115). An amorphous fluoropolymer encapsulant encapsulates the emitting face of the diode die (114), and may be shaped as a lens to form an integral encapsulant/lens. Or, a lens (230, 340) of amorphous fluoropolymer may be joined to the encapsulant (220). Additional joined or separate lenses (350) may also be used. The encapsulant/lens is transmissive to UV light as well as infrared light. Encapsulating methods are also provided.